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Energy savings and comfort improvements through plant- and operating mode optimisation demonstrated by means of project examples

More than 40 percent of Europe's primary energy is required for conditioning of buildings. By improving energy efficiency, approximately 30 percent of this energy could be saved. Energy counts for 35 percent of the operating cost and put an increasing burden on the budget of real estate or facility managers.

Building Automation is able to drill down operating cost and by the same time increase energy efficiency as documented in the EN 15232 (Energy performance of buildings - Impact of Building Automation, Controls and Building Management) norm. This standard notes that advanced high performing building automation can save up to 30 percent of thermal and 13 percent of electrical energy (for example in office buildings) compared to buildings with minimum building automation standard.

An investigation1) of the energy consumption of various buildings identified significant savings in electricity and heating. 74 percent of the reviewed buildings are office or administrative type buildings, the majority of them air-conditioned. On average, the savings in primary energy demand were found to be as high as 23 percent per building. Surprising is the large percentage of the electricity needed for cooling and transport of the supply and exhaust air of 48 percent. Approximately 75 percent of this electricity is exclusively used to transport air. The survey results coincide with recent experience of energy experts from Honeywell. Based on their 30 years of experience with energy saving projects they are able to identify and activate savings that often exceed 40 percent at their customer sites.

Control based means such as adjusting the operating time of ventilation systems to actual requirements, the installation of fan motors and pumps with high efficiency of up to 90 percent, the use of high-quality air filters and intelligent sensors are worthwhile investments, which rapidly pay off. Using thermography imaging, load measurements or plant operation analysis, Honeywell Building Solutions specialist are able to propose dedicated measures for buildings, that minimize the operational cost (and thus the extras tenants have to pay), the air pollutant emissions and increase the user comfort.

During the course of the presentation three successful saving projects will underline the possibilities to improve plant operation with the help of know-how, measurement, control and precise sensor technology.

The three German projects are:

- The Municipal Hospital at Dessau
- The Goethe-University at Frankfurt am Main
- The pharmaceutical company CSL Behring at Marburg

1) Controlling energy in office buildings, department of energy at Frankfurt am Main, 2002 (Energiecontrolling in Bürogebäuden, Energiereferat der Stadt Frankfurt am Main, 2002)